

PROJECT SPOTLIGHT

Precast concrete delivers an inspired performing arts center

A modern education lab and community hub, the Aetos Center for the Performing Arts in Nixa, Mo., is a state-of-the-art venue and education space offering a variety of performances and activities. The building supports regionally and nationally recognized performing arts programs with a 1100-seat theater, lobby, and support and back-of-house production spaces. Thanks to the use of precast concrete, the Aetos Center for the Performing Arts has generated an impactful presence in the community.

The center's design features a light-filled lobby that welcomes visitors inside. Another design highlight is the concept of a curtain. While a theater curtain typically identifies and frames the area for performances, the center's curtain is abstracted into a textured precast concrete enclosure that unifies the performance and viewing spaces.

"We chose precast because it could do more with less, and then some," says Kirk Dillon, project architect for Dake Wells, the architecture firm on the project. "Big spans, a minimal structural footprint, durability, and integral systems paired with a moldable exterior surface meant we could solve practical problems while also finding room for design opportunity."

The total-precast concrete Aetos Center for the Performing Arts in Nixa, Mo., with a 1100-seat theater is a state-of-the-art venue and education space that offers a variety of performances and activities. Copyright Gayle Babcock/Architectural Imageworks LLC.

The use of precast concrete helped alleviate site-related construction challenges, including a limited jobsite footprint, since panels were delivered ready to install and assembled both in minimal time and with little disruption to the school's operations.

In addition, Prestressed Casting Co. of Springfield, Mo., was able to cast shape and texture into the exterior surface of the precast concrete wall panels, which meant that the design could be economically integrated into a watertight, structurally sound, and thermally resistant enclosure. The company leveraged just two custom formliner patterns, which were used in an alternating fashion, along with the strategic application of stain, to cost-effectively enhance the illusion of depth and movement.

"This project created new opportunities to leverage total-precast design, from the open space of the long-span roof tees to the ability to create tall, insulated wall panels that allow for significant architectural expression," says Dave Robertson Jr., vice president of sales for Prestressed Casting Co. "From a producer's perspective, utilizing precast was not only effective for the project programming and construction logistics but for achieving the architectural look desired."

Construction of the new performing arts center was completed in under two years. The use of precast concrete, which included 129 pieces in six different forms, significantly expedited the time line. It is estimated that the use of precast concrete wall and roof systems saved several months of construction time and preserved valuable real estate for school operations.

—Mason Nichols



Precast concrete panels add artistic flair to airport parking structure

Newark Liberty International Airport in New Jersey is a major hub for travel on the East Coast. In 2022, the airport served more than 43 million passengers, making it the 13th-busiest airport in the country. With such a high level of annual activity, Newark Liberty requires ample support for its rental car facilities. The new 2.7 million ft² (250,000 m²) consolidated rental car facility (CONRAC) offers just that, providing more than 2700 public parking spaces and more than 3300 rental car spaces supporting 10 different rental brands.

Mike Teixeira, senior project manager for High Concrete Group, says that precast concrete was the ideal building material to support the effort, which, due to its massive scale, is the company's largest-ever project to date. An assortment of 6344 precast concrete products were incorporated into Conrac's design, including 12, 15, and 16 ft (3.66, 4.57, and 4.87 m) double tees, custom single-leg tees for the structure's helix, solid slabs, girders, spandrels, columns, stair risers, wall panels, and mural wall panels.

The helix is the star of the structure. It features artwork that was commissioned to depict the transportation activity occurring both at the airport and within the surrounding communities in New Jersey and New York. West Coast artist Don Clark designed the mural depicted on the precast concrete panels. Cars, buses, airplanes, helicopters, and more are part of the design.

Clark worked in concert with a three-dimensional sculptor to determine the depths and widths of the reveals that High Concrete would need to use on each of the panels. High Concrete's modeler then partnered with Clark and Architectural Polymers, a formliner company, to take the artwork and overlay it into the helix. Eighty-six individual formliners were used to complete the mural, which covers 19,000 ft² (1800 m²) of exposed precast concrete. As Teixeira says, the mural wall panels are more than aesthetically pleasing.

"These are also structural panels," he says. "It's not just for the look. Those support the double tees throughout the helix. Laying out the joints within the mural was important to where the corbels needed to be to support all the ramps on the inside."

Another feature of the sprawling CONRAC complex is the plumbing and infrastructure necessary to support the rental car companies. Each business leverages fueling, maintenance, and cleaning stations for their daily operations. Teixeira noted that this resulted in much more coordination and early design planning among the project team than would typically be required on a more standard parking structure.

Precast concrete brought several advantages to the effort, including a reduced construction time line, the CONRAC's signature look, and the promise of a sustainable solution that will provide value to the community for decades to come.

"Working on a garage of this size requires a companywide effort from beginning to end," Teixeira says. "Every coworker at High Concrete Group played a role in bringing this project to life. The level of coordination it took from our team, along with the quality of the final product, brings a lot of pride to all who were involved"

—Mason Nichols **■**

The new 2.7 million ft² (250,000m²) consolidated rental car facility at the Newark Liberty International Airport in New Jersey provides more than 2700 public parking spaces and more than 3300 rental car spaces. Precast concrete helped give the new parking structure its distinctive creative exterior. Courtesy of High Concrete Group.

